Determination of Best Refractories Suitable for Glass Forming Molds by Manual Blowing

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Abstract:

Refractories are characterized by their ability to withstand high temperatures that reach 2800°C, their ability to withstand sudden changes in temperature, resist mechanical shocks, due to the formation of glass at a temperature of 1050-1100°C, it is required that the molds manufactured from refractories withstand that temperature. This is in addition to the ability of the refractory material to show the fine details and the prominent and recessed sculptural surfaces (smooth - rough) in the glass product, and to achieve the uniqueness and excellence of the glass product. This is due to the requirements of refractory mold in its manufacture and assortment with manual blowing in terms of its ability to withstand pressures, non-fragmentation, thermal endurance that reaches (1500 - 1750°C), and a low rate of expansion and contraction that reaches ± 0.05 mm, as well as its flat smoothness, which is considered as a mirror of a model formation. Since the glass material is acidic, it requires that the components of the refractory composition of the mold be acidic or neutral as well. To prevent the adhesion with the glass components thus, some refractories were selected that enter into the work of refractory formulations that can achieve chemical and natural properties suitable in the manufacture of glass forming molds by manual blowing. (16) Refractory compositions were made, and the research reached to find new refractories that meet the requirements. Thus, it is recommended to use refractories for producing the prototype of the glass products which are characterized by aesthetic products.

Keywords:

Refractories, High temperature, Mechanical shock, Glass, Glass molds.

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